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An Examination of Psychological Variables Affecting Injured Athletes Prior to Returning to Play

Jessica Marie Meyers

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A Thesis

Presented to

the College of Graduate Studies of

Georgia Southern University

In Partial Fulfillment

of the Requirements for the Degree

Master's of Science in Kinesiology

With an Emphasis in Sport Psychology

In the Jiann-Ping Hsu School of Public Health

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by

Jessica Marie Meyers

May 2004

April 5, 2004

To the Graduate School:

This thesis, entitled "An Examination of Psychological Variables Affecting Injured Athletes Prior to Returning to Play," and written by Jessica Marie Meyers is presented to the College of Graduate Studies of Georgia Southern University. I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Kinesiology, with an Emphasis in Sport Psychology, in the Jiann-Ping Hsu School of Public Health.

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And recommend its acceptance:

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Bryan Riemann, Committee Member

D. Richard Carter, Department Chair

Accepted for the College of Graduate Studies

Charles J. Hardy
Acting Dean, College of Graduate Studies

DEDICATION

In recognition of their unconditional love, support, and encouragement,

I hereby dedicate this thesis to the following influential individuals,

My parents, Daniel and Karen Meyers

As well as my sister, Sarah Kathleen Meyers

ACKNOWLEDGEMENTS

I wish to thank my thesis director, Dr. Joyner. Words could never come close to describing how grateful and appreciative I am of all the encouragement you have lent me throughout the thesis process. Your love and passion for teaching and working with students shines brightly and is very admirable. Knowing that I could come to you with any thesis concerns or just sit and talk about life is priceless. You are a true inspiration to me and I thank you.

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who is always thinking of me and was able to contribute not only data, but alsc encouragement throughout the thesis process.

VITA

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EDUCATION

2002/ **Georgia Southern University,** Statesboro, GA
2004 Master of Science in Kinesiology – Emphasis in Sport Psychology

COURSE WORK:
Research Design in Kinesiology (3 hours)
Data Analysis in Kinesiology (3 hours)
Psychology of Peak Performance (3 hours)
Team Dynamics (3 hours)
Current Issues in Sport Psychology (3 hours)
Sport Psychology Interventions (3 hours)
Practicum in Sport Psychology (3 hours)
Professional Orientation and Ethics (3 hours)
Social and Ethical Issues in Sport (3 hours)
Exercise Physiology (3 hours)
Thesis (6 hours)
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1998/ **University of Pittsburgh at Johnstown,** Johnstown, PA
2002 Bachelor of Science – Psychology; Related Area - Sociology

PROFESSIONAL EXPERIENCES IN SPORT PSYCHOLOGY

2004 **Practicum – Sports Performance Enhancement**
Georgia Southern University, Statesboro, GA
Practice knowledge and skills of sport psychology interventions, involved in supervised and applied environments allowing work with teams and individuals.

2003 **Performance Enhancement Consultant**
East Hills Recreation, Johnstown, PA
Implemented self-confidence, goal setting, concentration, relaxation, metal imagery, and anxiety reducing interventions with athletes in order to enhance performance.

WORK EXPERIENCE

2002/ **Graduate Assistant-Campus Recreation and Intramurals**
2004 Georgia Southern University, Statesboro GA
Responsible for processing memberships, trip coordination, intramural entries, and the collection and distribution of money and receipts, purchasing and receiving of office supplies, answering and directing all incoming telephone inquires, coordinating weekly communication center meetings, typing of various reports and correspondence, data entry of personal training clientele, management and organization of waivers, served as liaison for Club Sports, Intramurals, and Southern Adventure programs for the Communication Center, proficient in Rec Trac.

2002 **Temporary Admissions Coordinator**
Select Specialty Hospital, Johnstown, PA
Responsible for processing patient insurance checks, admitted and discharged patients, communicated with area hospitals, worked closely with nurse liaisons, attended daily treatment team meetings, organized patient charts for the corporate office and chief doctor, confidentiality crucial.

2001 **Psychology Internship**
Memorial Medical Center, Adult Inpatient Psychiatric Unit and Geropsychiatric Unit, Johnstown, PA
Worked with the social workers, psychiatrists, psychiatric nurses, and occupational therapists to meet the needs of mentally ill patients, completed patient intakes, facilitated group sessions on self-esteem, depression, medications, and follow-up care preceding discharge, observed treatment team, completed case worker assessments by individually meeting with patients, networked with Western Psychiatric Institute and Clinic and Torrance State Hospital.

2001 **Residence Director of the Living and Learning Center**
University of Pittsburgh at Johnstown, Johnstown, PA
Responsible for maintaining a suitable living environment for nearly 400 residents, directed and guided the residents as well as supervised four Resident Assistants, managed various administrative duties including maintenance requests, incident reports, and room transfers, created, planned, and implemented educational, social, and recreational programs. Prior to Residence Director promotion, served as Resident Assistant of Hemlock Hall, August 1999-May 2000.

2000 **Communications Center**
Idlewild Park, Ligonier, PA
Responsible for entry of time sheets, First Aid Reports, repair requests, daily operation reports, and daily safety checklists, base switchboard, maintenance of confidentiality vital. Received Three Musketeer Award for performance of excellence.

2000 **Manager-Raccoon Lagoon (Kiddy Land)**
Idlewild Park, Ligonier, PA
Responsible for ride operations, trained and managed over 20 Team Members, fulfilled daily administrative duties including daily operation reports, daily safety checklists and daily time sheets, ongoing effective, friendly communication skills with hundreds of children and parents, included seven rides. Awarded The Best Of The Best Pin for continually smiling while working. Prior to Manager promotion, served as Assistant Manager of Jumpin' Jungle, May 1999-August 1999.

RESEARCH EXPERIENCES

2003/ 2004 **Master's Thesis – Sport Psychology**
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A Quantitative Examination of Psychological Variables Affecting Injured Athletes Prior to Returning to Play

PRESENTATIONS

2004 **Graduate Student Scholarship Day**
Georgia Southern University, Statesboro, GA
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ACTIVITIES/MEMBERSHIPS

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HONORS/AWARDS

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2001/2002 Dean's List

ABSTRACT

AN EXAMINATION OF PSYCHOLOGICAL VARIABLES AFFECTING INJURED ATHLETES PRIOR TO RETURNING TO PLAY

May 2004

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Injury occurs in a variety of different sports and affects athletes in a number of different ways. Following injury, athletic identity is often lost, bringing upon feelings of anger and depression (Brewer, 1993; Fortunato & Marchant, 1999). As athletes begin to re-enter sports, lower levels of sport-confidence are exhibited (Johnston & Carroll, 1998). Social support has been shown to motivate individuals as well as aid in the overall progress of rehabilitation (Ford & Gordon, 1999; Magyar & Duda, 2000). The purpose of the current study was to determine psychological factors that may influence returning to a sport in which injury had occurred. A deliberate sample of northeastern and southeastern NCAA Division I, II, and III student-athletes were examined. The criterion for inclusion was that each participant must have sustained an acute musculoskeletal injury due to participation in a sport, and miss at least one week of competition and/or practice, or participate in modified activity at the certified athletic trainer's (ATC) discretion (Granito, 2002; Johnston &

Carroll, 2000). As an injured athlete became ready to return to play and met the criteria for inclusion in this study, an ATC contacted the researcher within one week prior to the return to play. Prior to a rehabilitation session with the certified ATC, athletes were asked to complete a questionnaire packet containing the Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001), Trait Sport-Confidence Inventory (Vealey, 1986), Modified-Social Support Survey (Barefield & McCallister, 1997), Modified-Outcomes Measure Scale (Albohm & Wilkerson, 1999), and a demographic questionnaire. The ATC was asked to complete the Sport Injury Rehabilitation Adherence Scale (Brewer, et al., 2002) to rate participant adherence. Results indicated that satisfaction with one type of support was related to satisfaction with any other type of support. The AIMS was found to have a positive correlation with satisfaction with the ATC at medical release. Listening support was related to psychosocial status at medical release, as well as with ATC satisfaction at medical release. Psychosocial status had a positive relationship with satisfaction with task appreciation and satisfaction with personal assistance. Positive relationships were found among several dysfunctional subscales. Expectations of support were found to be much lower than the support received and the satisfaction with the support received. Improvement was noted for most dysfunctional subscales during rehabilitation. No differences existed for Division level or injury type.

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Sport injury is an experience that has a two-fold impact on the lives of athletes. This experience is not only physically demanding, but also psychologically challenging (Ford & Gordon, 1998). Injured athletes often experience a variety of emotions, ranging from fear to isolation (Robbins & Rosenfeld, 2001). The way in which athletes perceive the injuries will affect how they react to injuries. Brewer (1994) developed a cognitive appraisal model to assess the psychological differences that occur due to personal and situational factors athletes experience during injury. Several psychological variables, such as athletic identity, self-confidence, social support, satisfaction with support received, level of dysfunction, and adherence may affect injured athletes in a variety of different ways.

Following injury, athletic identity is often lost, bringing upon feelings of anger and depression (Brewer, 1993; Fortunato & Marchant, 1999). Brewer conducted several studies that concluded that injury creates a feeling of depression among athletes (Brewer, 1993). When the opportunity to play sports is taken away athletic identity is hindered. Athletes with a strong athletic identity experience adjustment difficulties when injury occurs, in particular men and/or those expecting to play sports at a higher level (Webb & Nasco, 1998; Wiechman & Williams, 1997). A case study conducted by Sparkes (1998) spoke of a young female athlete with a strong athletic identity. Due to medical reasons she was unable to return to her sport. She did not allow herself to identify with roles outside of athletics,

therefore becoming angry and depressed (Sparkes, 1998). On the other hand, athletic injury oftentimes leads many athletes to develop their lives in areas outside of sport (Udry, Gould, Bridges, & Beck, 1997).

According to Vealey, Hayshi, Gamer-Holman, and Giacobbi (1998), self-confidence is considered to be the most critical psychological variable to influence sport. Self-confidence has been seen to affect sports in a variety of different fashions, such as choking and performance slumps and has even been related to perceptions of social support received during injury rehabilitation (Handegard, Joyner, Burke, & Riemann, 2004; Vealey et al., 1998). Often, reports of self-confidence surround coping strategies for performance enhancement, with athletes who have higher trait-sport confidence being positively correlated with those who use problem-focused coping strategies (Grove & Hearch, 1997). Women derive a great deal of sport-confidence based on approval of their femininity, often exhibiting lower levels of sport-confidence in relation to body image and perceptions of body image (Vealey et al., 1998). Following injury, high levels of social support during rehabilitation have been found to be a source for self-confidence (Handegard et al., 2004; Magyar & Duda, 2000).

Social support is shown to not only encourage and motivate individuals, but also to increase optimism (Ford & Gordon, 1999). Richman, Rosenfeld, and Hardy (1993) have identified the following eight types of social support: listening support, emotional support, emotional challenge, reality confirmation, task appreciation, task challenge, tangible assistance, and personal assistance. Sometimes support is given to an injured athlete from family and friends, but those included in that social support system do not understand what

the athlete is really going through (Fortunato & Marchant, 1999). Athletes, specifically women, were shown to be more satisfied with the amount of listening and emotional support and task appreciation received from certified athletic trainers (ATC) both before and after injury occurred than with that provided by their coaches and assistant coaches (Handegard et al, 2004, Johnston & Carroll, 2000; Robbins & Rosenfeld, 2001). Athletes often view the support they receive from the ATC as valuable, allowing the athletes to gain trust and confidence in the ATC (Rich, 2000). The quality of social support received significantly correlates with the amount of time missed due to injury (Ford, Eklund, & Gordon, 2000).

Adherence to sport rehabilitation has become an important topic due to the need for successful and positive completion of rehabilitation sessions (Brewer, 1998). Environmental (time, social support, and comfort), physical (motivation and fear), and psychological factors (greater sense of enjoyment regarding rehabilitation and self-direction) have been found to be predictors for adherence (Pizzari, McBurney, Taylor, & Feller, 2002). Several behaviors, such as compliance with instructions for physical activity restriction, completion of home exercises, icing at home, compliance with prescriptions, and participation in exercises during therapy, have been found to typically be associated with sport rehabilitation adherence. Adherence can be monitored by taking attendance at rehabilitation sessions, using practitioner observations and judgments, doing required exercises at home, completing of rehabilitation, and rate of healing (Brewer, 1998). Athletes who engaged in goal setting and positive self-talk, as well as those who have a higher sport involvement are considered as better adherents (Johnston & Carroll, 2000; Scherzer et al., 2001).

At the initial onset of injury, frustration and depression are engaged due to the disruption of normal functioning (Johnston & Carroll, 1998). Many emotions and behaviors such as anxiety, fear, depression, along with wanting to quickly return to play, and lack of understanding of injury and recovery are elicited by dysfunction. The most significant of these emotions and behaviors are noncompliance, denial, lack of understanding of injury, and wanting to quickly return to play (Ford & Gordon, 1998). Often those experiencing a serious injury and remain out of play for an extended amount of time report being frustrated (Tracey, 2003). With the aid of an ATC, the physical and psychological set backs that occur due to dysfunction are reduced (Ford & Gordon, 1998).

Because injury is such a common occurrence across the realm of sports, research is needed to investigate variables that may affect the outcomes of injury and investigate the reasons athletes decide to return to play. Past research has suggested that athletes competing at higher levels react differently to athletic injury, as do athletes of different gender and injury type. Therefore, the purpose of this study was to determine psychological factors that influenced returning to a sport in which injury had occurred. From this purpose statement several research questions were proposed. When an athlete returns to play, what was the relationship between their confidence level, athletic identity, social support, satisfaction, dysfunction, and adherence? When an athlete returns to play, did a difference exist between NCAA Division I and combined Division II and Division III institutions for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence? Did a difference exist between gender for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence when an athlete returns to play? When returning to play, was

there a difference between contact and non-contact injuries for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence? Did dysfunction improve throughout rehabilitation?

Methods

Participants

A deliberate sample (N=19) of southeastern and northeastern NCAA Division I, Division II, and Division III student-athletes (ages 18-22; *M*=20.16 years old) and their ATC (N=9; ages 22-27; *M*=24 years old) were examined. The participants were selected from fall, winter, and spring sports. These sports included baseball (n=7), softball (n=2) men's basketball (n=1), women's basketball (n=1), cheerleading (n=1), football (n=4), women's soccer (n=1), swimming and diving (n=1), tennis (n=1). The participants included a combination of both starter (n=12) and reserve (n=7) players. Each ATC was a graduate student with the exception of one full-time ATC. The criterion for inclusion was the participant must sustain an acute musculoskeletal injury due to participation in a sport and miss at least one week of competition and/or practice or participate in modified activity at the ATC's discretion (Granito, 2002; Johnston & Carroll, 2000).

Measures

Athletic Identity. A modified version of the Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001) was used to measure the amount in which an individual identifies with the role of being an athlete (See Appendix C). The AIMS consists of 7 items, which contain such statements as "I consider myself an athlete" and "Sport is the most

important part of my life" (Brewer & Cornelius, 2001). The participants responded on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

The original 10 item AIMS has been reported to be both a reliable and valid tool for measuring the degree to which an athlete identifies with sport (Brewer et al., 1993). After being cross-validated with a large sample of athletes, the original 10 item questionnaire was found to share similar test-retest reliability (r=.89) and internal consistency (alpha=.81) as the 7 item AIMS, as well as a strong correlation (r=.96) between the total score for the original 10 item questionnaire and the revised 7 item model (Brewer & Cornelius, 2001).

Self-Confidence. To measure self-confidence in sport, Vealey's (1986) Trait Sport-Confidence Inventory (TSCI) was administered (See Appendix D). The TSCI assesses individual confidence when performing a task. This inventory contains 13 items that asked each participant to rate their confidence prior to injury. Responses were provided on a 9-point Likert scale. Questions asked the participant to compare his or her self-confidence to the most self-confident athlete they know. The TSCI has strong internal consistency with alpha levels of .93 and a test-retest reliability of r=.86 (Vealey, 1986). The TSCI's prediction of precompetitive (r=.60) and postcompetitive (r=.45) state sport-confidence, two aspects measured by the State Sport-Confidence Inventory (SSCI), established acceptable evidence for construct validity (Vealey, 1986).

Social Support. A modified version of the Social Support Survey (SSS; Barefield & McCallister, 1997) was administered (See Appendix E). The survey assesses four types of social support: listening support, emotional support, task appreciation, and personal assistance; and asks three questions for each type of support to assess: the degree to which a

type of support was provided, the extent to which the participant expected or hoped to receive that type of support, and the quality of the support received (Barefield & McCallister, 1997; Richman et al., 1993).

The Original SSS (Richman et al., 1993) used a 5-point Likert scale ranging from 1 (*very dissatisfied, very difficult, or very unimportant*) to 5 (*very satisfied, very easy, or very important*). Strong content validity, construct validity, and concurrent validity have been reported, while test-retest reliability has been shown to range from .44 to .87 (Richman et al., 1993).

The modified SSS uses a 5-point Likert scale ranging from 1 (*very little support provided, very little expectation, very dissatisfied*) to 5 (*a great deal of support provided, very high expectation, very satisfied*). For the purposes of the current study, only questions pertaining to the support provided by the ATC's were assessed. Expert athletic trainers, sport psychologists, sport sociologists, and physical educators determined validity (Barefield & McCallister, 1997).

Satisfaction and Dysfunction. A revised version of the Outcomes Measurement Scale (OMS; Albohm & Wilkerson, 1999) was administered to assess participants' perceptions of their functional capabilities over time, in addition to overall satisfaction with the ATC following the completion of rehabilitation (See Appendix F). Individual and group factors such as functional outcomes, physical outcomes, general health status, medical condition, and psychosocial status were measured using a 5-point Likert type scale ranging from 0 (*critical problem*) to 4 (*no problem*). ATC satisfaction was also assessed using a 5-point Likert-type scale with responses ranging from 0 (*critical problem*) to 4 (*no problem*).

Correlating the qualitative individual and group outcome results with pre- and post-treatment validated the OMS assessments made by independent therapists (Albohm & Wilkerson, 1999). Reliability and validity have not been established for the OMS.

Adherence. The Sport Injury Rehabilitation Adherence Scale (SIRAS; Brewer et al., 2002) allowed practitioners' to rate injured athletes on adherence to clinically-based rehabilitation programs (See Appendix G). This 3 item instrument was scored using a 5-point Likert-type scale which assesses the degree to which patients exert themselves, follow practitioner instructions and advice, and are receptive to changes in the rehabilitation program during the given rehabilitation session. The SIRAS shows a test-retest reliability of ICC=.77, strong internal consistency (Cronbach alpha=.82), and a significant positive correlation with both attendance and rehabilitation sessions and adherence to home-based rehabilitation activities, therefore exhibiting evidence for construct validity (Brewer et al., 2002).

Procedure

Pilot study. Kinesiology graduate students (N=10) were asked to complete the questionnaire packets. After timing the completion rate of each questionnaire, a discussion took place assessing the value and length of each instrument in the questionnaire packet and the clarity of the instructions given. Adjustments, such as reducing the length of certain questionnaires, occurred as needed.

The University Institutional Review Board approved all procedures and all participants signed a consent form (See Appendix H). Institutions (n=9) asked to participate in the current study were telephoned and electronically mailed by the researcher, however,

only three institutions agreed to participate. As an injured athlete became ready to return to play and met the criteria for inclusion in this study, an ATC contacted the researcher within one week prior to the return to play. If the researcher was unable to travel to the location of the injured athlete, a detailed set of instructions was given to the injured athlete's ATC indicating proper administration of the questionnaire packet (See Appendix I).

Prior to one of the rehabilitation sessions with the ATC, athletes were asked by the researcher or informed ATC to complete a questionnaire packet containing the AIMS, TSCI, Modified-SSS, Modified-OMS, and a demographic questionnaire (See Appendix J). The packets included a number code to insure confidentiality. The ATC was asked to complete the SIRAS to rate participant adherence. The athletes were made aware of the questionnaire the ATC's were completing and that it would not have an affect on their rehabilitation status or athletic participation. All participants gave completed questionnaires to the researcher or informed ATC. Athletes who the researcher was unable to administer the questionnaire packet placed their questionnaire packet into an envelope. That envelope was then given to the ATC to include the SIRAS and then mailed back to the researcher. Afterwards, all participants were verbally informed of the purpose of the study and thanked for their cooperation.

Data Analysis

Correlations were used to determine the relationship between each of the psychological variables. Independent t-tests were used to determine differences between Divisions (I and combined II and III) for self-confidence, athletic identity, social support, satisfaction with the support, dysfunction, and adherence. Independent t-tests were also used

to determine gender differences for self-confidence, athletic identity, social support, satisfaction with the support, dysfunction, and adherence. Independent t-tests were run to determine if a difference exists between contact and non-contact injuries for self-confidence, athletic identity, social support, satisfaction with the support, dysfunction, and adherence. Dependent t-tests were performed to determine if an improvement in dysfunction occurred from immediately post-injury until medical release. An alpha level was set at .01.

Results

Demographic Data

Of the 19 participants, 68.4% (n = 13) were men and 31.6% (n = 6) were women. Caucasian made up 73.7% (n=14) of the sample, while African American (n=3) consisted of 15.8% and Hispanic represented 10.5% (n=2) of the total sample. Academically, 15.8% (n=3) were freshmen, 31.6% (n=6) were sophomores, 26.3% (n=5) were Juniors, and 26.3% (n=5) were Seniors. Division I athletes made up 63.2% (n=12), while Division II and Division III combined made up 36.8% (n=7) of the total participant sample. Of the sports listed as injury causing sports, 47.4% (n=9) listed baseball/softball, 21.1% (n=4) football, 10.5% (n=2) basketball, 5.3% (n=1) soccer, 5.3% (n=1) tennis, 5.3% (n=1) cheerleading, and 5.3% (n=1) swimming/diving. Those participants competing in the sport that caused the injury for 10 or more years make up 63.2% (n=12), with 15.8% (n=3) participating for 2 years, 5.3% (n=1) participating for 3 years, 10.5% (n=2) participating for 4 years, and 5.3% (n=1) participating for 5 years. Starters consisted of 63.2% (n=12) and reserves consisted of 36.8% (n=7) of the total participant population. Of the total injuries, 57.9% (n=11) did not occur as a result of physical contact, while 42.1% (n=8) did occur due to physical contact.

Participants were out of play for a mean of 73.26 (+/-67.15) days. Of the 19 athletes experiencing injury, 57.9% (n=11) had never experienced this type of injury before, while 42.1% (n=8) had experience with the current injury type.

Correlations were performed to find relationships between the athletic identity, confidence level, social support, satisfaction with the support, dysfunction, and adherence to rehabilitation. The results indicate several significant correlations, $p<.01$. Satisfaction with listening support was found to relate to satisfaction with emotional support, $r=.76$, $p<.01$, satisfaction with task appreciation, $r=.58$, $p<.01$, and satisfaction with personal assistance, $r=.60$, $p<.01$. Satisfaction with task appreciation was found to have a significant relationship with satisfaction with personal assistance, $r=.85$, $p<.01$, and satisfaction with emotional support, $r=.82$, $p<.01$. Satisfaction with emotional support was found to have a significant positive relationship with satisfaction with personal assistance, $r=.66$, $p<.01$. The AIMS was reported as having a significant positive relationship with satisfaction with the ATC at medical release, $r=.67$, $p<.01$. A significant positive relationship was found between satisfaction with listening support and psychosocial status at medical release, $r=.66$, $p<.01$, as well as with satisfaction with the ATC at medical release, $r=.66$, $p<.01$. Psychosocial status at medical release had a significant positive relationship with satisfaction with task appreciation, $r=.62$, $p<.01$, and satisfaction with personal assistance, $r=.71$, $p<.01$. Several significant positive relationships were found between the various dysfunctional subscales (See Table 1).

Social Support

Participants reported little expectation for any of the four types of social support, but indicated a great deal of support was provided, as well as being very satisfied with the support received. As many as eight participants reported expecting very little listening support from their ATC. Prior to returning to play, 18 had reported that a great deal of listening support was provided in addition to being very satisfied with the overall quality of listening support received from the ATC.

Participants reported a wide range of scores regarding expected emotional support, with seven participants indicating very little expectation, and eight participants reporting very high expectation. However, before medical release from the ATC, 15 reported that a great deal of support was provided and 18 reported being very satisfied with the support received.

Participants (n=8) had little expectations of receiving task appreciation from the ATC. Concluding rehabilitation, 17 participants indicated receiving a great deal of support from the ATC and were very satisfied with the support.

As many as 12 participants indicated they had very high expectations of receiving personal assistance from their ATC. Prior to returning to play, 18 participants reported receiving a great deal of support from their ATC, with 17 participants indicated as being very satisfied with the support received.

Division Differences

Due to the small amount of participants for Divisions II (n=5) and Division III (n=2), the data for the two groups were collapsed. Independent t-tests were performed to determine

if any differences exist between NCAA Division I and combined Division II and III institutions for athletic identity, self-confidence, social support, satisfaction with that support, dysfunction, and adherence to rehabilitation. No significant differences were found between these divisions ($p>.01$). Division I, however, reported a mean score of $M=36.5$ (+/-9.52) and combined Division II and III reported a mean score of $M=42.71$ (+/-4.92) on the AIMS indicating a relatively strong athletic identity (See Table 2).

Gender Differences

Independent t-tests were computed to determine if differences existed between gender and athletic identity, self-confidence, social support, satisfaction with that support, dysfunction, and adherence to rehabilitation. A significant difference did occur between the scores of the TSCI. Men had a mean of $M=106.15$ (+/-8.52) and women had a mean of $M=87.83$ (+/-16.96), $p<.01$ (See Table 3). No other significant differences were found ($p>.01$).

Contact versus Non-contact Injury

Independent t-tests were utilized to determine if differences existed between contact and non-contact injury for athletic identity, self-confidence, social support, satisfaction with the support received, dysfunction, and adherence to rehabilitation. No significant differences were found ($p>.01$). Contact and non-contact injury M and SD are illustrated in Table 4 for athletic identity, self-confidence, satisfaction with listening support, emotional support, task appreciation, and personal assistance, and adherence.

Dysfunction

Dependent t-tests were performed to determine if an improvement in dysfunction occurred from immediately post-injury until medical release. Significant improvement was noted for each of the dysfunction categories except psychosocial status and satisfaction with ATC, $p<.01$ (See Table 5).

Discussion

As in Brewer's Cognitive Appraisal Model, the current study set out to determine the psychological development that may occur following an injury (Brewer, 1994). Although Brewer's model is meant to determine individual differences among injured athletes, the current study was in search of patterns of perception. Various personal and situational factors such as athletic identity, self-confidence, social support, satisfaction with social support, dysfunction of daily activities and adherence to rehabilitation were explored.

Although no significant difference was found between Divisions for athletic identity, a relatively strong athletic identity was found for both Division I and combined Division II and III athletes, with the majority of the Division I participants being either juniors or seniors. Wiechman and Williams (1997) noted participants who expect to play sports at a higher level score significantly higher for athletic identity than those who do not expect to continue advancing in athletics. However, during the participants' fourth and fifth years of college, academics often become more important, as a realization that they were not going to participate in sport at a higher level (Miller & Kerr, 2003). Research suggests that athletic identity would be positively correlated with depression for the injured participants and negatively correlated with depression for the uninjured participants (Brewer, 1993).

Johnston and Carroll (1998) found that many athletes experienced depression whenever rehabilitation was not progressing successfully, therefore leading to a possible lack of confidence when re-entering sports. No significant correlations were found for athletic identity and self-confidence in the current study.

In the past, men were found to have a significantly stronger athletic identity than women (Wiechman & Williams, 1997). However, in the current study no significant differences were found for gender. Men in the current study did, however, exhibit a significantly higher self-confidence than did the women. This corresponds with research that women tend to exhibit lower levels of sport-confidence in relation to body image and perceptions of body image (Vealey et al., 1998).

Although the current study did not find any gender differences in social support, past research attributes perceived social support as the most important source for female self-confidence, with women depending highly on emotional support (Johnston & Carroll, 1998; Vealey et al., 1998). Women, more so than men, were seen in the past as more satisfied with the amount of emotional and practical support received at the beginning of rehabilitation and with the amount of practical support received at the end of rehabilitation. Satisfaction with that support was rated as being lower at the beginning of rehabilitation than during the middle or end (Johnston & Carroll, 2000). As a whole, though, athletes in the current study viewed support as an important contribution to well-being (Magyar & Duda, 2000; Robbins & Rosenfeld, 2001). Individuals who were more satisfied with their social network had improved levels of dysfunction following an injury. This is similar to those who experienced less total mood disturbance and increased focusing capabilities

(Green & Weinburg, 2001; Magyar & Duda, 2000). One participant noted on her questionnaire, "Training staff very encouraging; helps me physically get back playing and keeps my spirits up too!" This thought could be a reason why an improvement in dysfunction was exhibited among the various subscales, therefore suggesting that a strong social support network aids in effective coping and that encouragement helps to motivate participant rehabilitation, increase self-perceptions, and increase optimism (Ford & Gordon, 1999). The satisfaction and psychosocial status dysfunctional subscales, however, related to very few of the other dysfunctional subscales possibly due to a lack of variability. The majority of participants rated satisfaction and psychosocial status as a less critical problem from immediately post-injury until medical release.

Teammates, trainers, and therapists are regarded as the best sources of support, while teachers and coaches are insufficient (Johnston & Carroll, 1998; Macchi & Crossman, 1996). Athletes who had reported receiving high levels of social support from family, teammates, and ATC's, were more likely to believe messages relating to self-confidence from the trainer (Magyar & Duda, 2000). The athletes' expectations of support were low, however, the athletes were shown to be highly satisfied with the amount of listening and emotional support, task appreciation, and personal assistance received from the ATC's during rehabilitation, a similar finding to that of Robbins and Rosenfeld (2001). Each of the four types of social support (listening support, emotional support, task appreciation, and personal assistance) was found to be positively related to each other. Supporting research suggests that the ATC was not considered a source of social support prior to injury, but afterward was perceived as providing listening support, task appreciation, task challenge,

and reality confirmation throughout all phases of injury rehabilitation (Handegard et al., 2004). A trend was observed between the amount of support provided by the ATC during rehabilitation and the participant's satisfaction with that support, a finding similar to that of Johnston and Carroll (1998). Findings were not similar to that of Barefield and McCallister (1997) in which support received and expected support, specifically listening support and task appreciation, were the same. A positive trend may exist between the amount of social support received, the satisfaction with that social support, and maintaining or increasing levels of self-confidence for both participants, as can be seen with males in the current study (Handegard et al, 2004). Satisfaction with the support received may be due to the age and status of the ATC. All but one of the ATC's in the current study were graduate students, thus, peers of the injured athletes. The collegiate athletes may have bonded well with an ATC of a similar age. Also, although 19 injured athletes participated in the current study, only nine ATC's were utilized. Many of the ATC's worked with several of the participating athletes. It is possible that ATC's in the current study were already proficient at providing social support to injured athletes, therefore permitting athletes to be highly satisfied with the support received.

Several considerations may be made regarding future research in the field of sport related injury. Although quantitative data is important and necessary, qualitative data would provide athlete and ATC insight, more so than questionnaires and surveys. It may also be beneficial to collect quantitative data immediately following the injury, therefore eliminating any recall bias. These data then could be collected throughout the rehabilitation process. Examining injury type and its affect on athletic identity, self-confidence, social support,

satisfaction with support, dysfunction, and adherence to rehabilitation may provide ATC's with insight into psychological dealings for specific injury types. It may also be interesting to examine in-season athletes and the affect on the various psychological variables.

Table 1

Correlations Between Medical Release Subscales for the Outcomes Measurement Scale

Subscale	02	03	04	05	06	07	08	09	10	11	12	13
01. GH	.69*	.77*	.69*	.69*	.70*	.57	.70*	.76*	.64*	.61*	.56	.46
02. SMC	---	.76*	.67*	.75*	.73*	.63*	.71*	.58*	.71*	.70*	.50	.10
03. DLA		---	.86*	.78*	.81*	.76*	.83*	.75*	.75*	.78*	.52	.38
04. WA			---	.73*	.79*	.85*	.92*	.61*	.77*	.87*	.56	.31
05. SRWA				---	.79*	.78*	.72*	.76*	.90*	.76*	.67*	.31
06. M					---	.86*	.91*	.76*	.89*	.86*	.47	.24
07. SP						---	.85*	.66*	.83*	.88*	.61*	.34
08. E							---	.67*	.82*	.92*	.59*	.34
09. MA								---	.77*	.55	.41	.46
10. BS									---	.79*	.60*	.32
11. S										---	.61*	.23
12. PSS											---	.58*
13. SAT												---

Note. GH=General Health; SMC=Specific Medical Condition; DLA=Daily Living Activity; WA=Work Activities; SRWA=Sports Recreation Wellness Activities; M=Movement; SP=Strength/Power; E=Endurance; MA=Motor Abilities; BS=Body Structure; S=Sensory; PSS=Psychosocial Status; SAT=Satisfaction with Trainer.

Table 2

NCAA Division Level Differences

	Division Level			
	I (n=12) *M* (+/-SD)		II & III (n=7) *M* (+/-SD)	
Athletic Identity	36.50	(+/-9.52)	42.71	(+/-4.92)
Self-Confidence	98.92	(+/-16.14)	102.86	(+/-11.20)
Listening Support Satisfaction	4.75	(+/-0.62)	4.43	(+/-0.53)
Emotional Support Satisfaction	4.50	(+/-0.67)	4.29	(+/-0.49)
Task Appreciation Satisfaction	4.50	(+/-0.80)	4.43	(+/-0.53)
Personal Assistance Satisfaction	4.67	(+/-0.78)	4.57	(+/-0.53)
SIRAS	14.00	(+/-1.48)	12.29	(+/-1.98)

Table 3

Gender Differences

	Gender			
	Men (n=13) *M* (+/-SD)		Women (n=6) *M* (+/-SD)	
Athletic Identity	38.77	(+/-9.80)	38.83	(+/-5.64)
Self-Confidence*	106.15	(+/-8.52)	87.83	(+/-16.96)
Listening Support Satisfaction	4.62	(+/-0.65)	4.67	(+/-0.52)
Emotional Support Satisfaction	4.31	(+/-0.63)	4.67	(+/-0.52)
Task Appreciation Satisfaction	4.38	(+/-0.77)	4.67	(+/-0.52)
Personal Assistance Satisfaction	4.54	(+/-0.78)	4.83	(+/-0.41)
SIRAS	13.15	(+/-1.95)	13.83	(+/-1.60)

*Significant difference between men and women, $p<.01$.

Table 4

Injury Contact Differences

	Contact (n=8) *M* (+/-SD)		Non-Contact (n=11) *M* (+/-SD)	
Athletic Identity	35.88	(+/-10.62)	40.91	(+/-6.38)
Self-Confidence	101.50	(+/-11.21)	99.55	(+/-16.71)
Listening Support Satisfaction	4.38	(+/-0.74)	4.82	(+/-0.40)
Emotional Support Satisfaction	4.13	(+/-0.64)	4.64	(+/-0.50)
Task Appreciation Satisfaction	4.25	(+/-0.71)	4.64	(+/-0.67)
Personal Assistance Satisfaction	4.38	(+/-0.74)	4.82	(+/-0.60)
SIRAS	12.88	(+/-2.53)	13.73	(+/-1.10)

Table 5

Change in Dysfunction

	Immediately Post Injury *M* (+/-SD)		Medical Release *M* (+/-SD)	
General Health*	2.16	(+/-1.12)	3.47	(+/-0.77)
Specific Medical Condition*	2.00	(+/-1.25)	3.32	(+/-0.75)
Daily Living Activities*	2.05	(+/-1.22)	3.26	(+/-0.81)
Work Activities*	1.74	(+/-1.37)	3.16	(+/-0.90)
Sports Recreation Wellness Activities*	1.37	(+/-1.26)	3.16	(+/-0.90)
Movement*	1.74	(+/-1.45)	3.05	(+/-1.08)
Strength Power*	1.74	(+/-1.37)	3.16	(+/-0.83)
Endurance*	1.68	(+/-1.34)	3.32	(+/-0.95)
Motor Abilities*	2.37	(+/-1.46)	3.58	(+/-0.84)
Body Structure*	1.84	(+/-1.54)	3.21	(+/-0.92)
Sensory*	1.63	(+/-1.42)	3.05	(+/-1.13)
Psychosocial Status	2.53	(+/-1.47)	3.47	(+/-0.61)
Satisfaction With Trainer	3.79	(+/-0.63)	3.89	(+/-0.46)

*Significant differences between pre and post, $p<.01$

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APPENDICES

APPENDIX A

Research Questions, Limitations, Delimitations, Assumptions, and Definitions of Te

Research Questions:

1. When an athlete is within one week prior to returning to play, what is the relationship between confidence level, athletic identity, social support, satisfaction, dysfunction, and adherence?
2. When an athlete returns to play, does a difference exist between NCAA Division I, and combined Division II and III institutions for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence?
3. Does a difference exist between gender for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence when an athlete returns to play?
4. When an athlete returns to play, is there a difference between contact and non-contact injuries for self-confidence, athletic identity, social support, satisfaction, dysfunction, and adherence?
5. Does dysfunction improve from immediately post-injury until medical release?

Limitations:

1. Deliberate sampling was used for participant selection; therefore there was a lack of randomization.
2. This study depended on the number and type of injury of athletes available at the time of the data collection.
3. The validity and reliability of the Outcomes Measurement Scale (Albohm & Wilkerson, 1999) have not been established.

Delimitations:

1. Inclusion in this study was not limited to type of injury.
2. No fall, winter, and spring collegiate sports were restricted from participation.
3. All participants were from either the southeastern or northeastern regions of the United States.
4. Division I, II, and III institutions were included.

Assumptions:

1. Confidentiality and anonymity enhanced the honesty of the answers provided for each questionnaire.
2. The directions for each questionnaire were clear and concise.
3. Accurate recall was achieved when completing the Outcomes Measurement Scale (Albohm & Wilkerson, 1999).
4. The directions for administering the questionnaire packets were comprehendible.
5. ATC's administering the questionnaire packets followed the provided directions.

Definitions:

1. Injury-An acute musculoskeletal injury due to participation in a sport (Johnston & Carroll, 2000).
2. Criterion for inclusion-An acute musculoskeletal injury due to participation in a sport and miss at least one week of competition and/or practice or participate in modified activity at the ATC's discretion (Granito, 2002; Johnston & Carroll, 2000).

3. Athletic Identity-The degree to which an individual identifies with the role of an athlete (Brewer, 1993). Athletic identity was measured using the Athletic Identity Measurement Scale (Brewer & Cornelius, 2001).
4. Self-Confidence-In relation to sports, the belief one can be successful in sport. Self-confidence was measured using the Trait Sport-Confidence Inventory (Vealey, 1986).
5. Social Support-Behaviors from trainers that are perceived by the injured athlete, as enhancing his or her well being. Social support can be elicited through four types of support: listening support, emotional support, task appreciation, and personal assistance. For the purposes of the current study, social support was measured using a modified version of the Social Support Survey (Barefield & McCallister, 1997).
6. Satisfaction-The athlete's perception of the professionalism and care received through rehabilitation from his or her ATC as measured by (Albohm & Wilkerson's 1999) Outcomes Measurement Scale.
7. Dysfunction-Perception of functional capabilities including general health, specific medical condition, daily living activities, work activities, sports/recreation/wellness activities, movement, strength/power, endurance, motor abilities, body structure, sensory, and psychosocial status as measured by Albohm and Wilkerson's (1999) Outcomes Measurement Scale.
8. Adherence-The ATC's perception of the degree to which patients exert themselves, follow practitioner instructions and advice, and are receptive to

changes in the rehabilitation program during the given rehabilitation session. Adherence was measured using the Sport Injury Rehabilitation Adherence Scale (Brewer et al., 2002).

APPENDIX B

Extended Review of Literature and Refer

Cognitive Appraisal Model

Brewer (1994) developed a cognitive model to explain the psychological development that occurs following an injury. This model accounts for individual differences between various injured athletes and also emphasizes the importance of examining an athlete's perception of injury rather than reactions to the injury. The way in which athletes perceive their injuries will impact the way in which they deal with that injury emotionally, thus influencing the behavioral response to the injury. The injured athlete's perceptions, or cognitive appraisals, are influenced by personal factors, such as attributes of the individual, and situational factors, such as environmental factors. Trait anxiety, self-esteem, and injury history are among some of the personal factors thought to affect an athlete's cognitive appraisal. Athletic identity, another personal factor, is tested as an athlete becomes injured. The way in which that injury is perceived will greatly affect the way athletes emotionally deal with the situation. Social support for rehabilitation, a situational factor, has been reported as positively relating to post-injury emotional adjustment, whereas injury severity, length of injury, and dysfunction of daily activities all have been seen to negatively relate to post injury emotional adjustment (Ford, Eklund, & Gordon, 2000; Ford & Gordon, 1998; Fortunato & Marchant, 1999; Johnston & Carroll, 2000). Both personal and situational factors have been reported to affect adherence to rehabilitation (Johnston & Carroll, 2000).

Stress-Injury Model

Andersen and Williams (1988) proposed a stress-injury model that supposes that psychological variables, coupled with stress, may affect injury in such a manner that induces a stress response. Individuals that have low coping abilities and many stressors, when placed

in stressful situations, will consider that situation as stressful. High stress may lead to increased muscle tension, narrow field of vision, and increased distractibility. The severity of the stress response may then predispose an athlete to injury. This model explains that individuals make a cognitive appraisal of a situation and then examine their physical ability to complete the task. An athlete will then assess the consequences of either failing or succeeding. If athletes perceive their adequacy as low and the importance of succeeding at a task as high, the stress response affects the body physiologically and psychologically and may lead to injury.

Injury and Psychological Processes

Granito (2002) studied different experiences that occur between male and female athletes regarding athletic injury. Injured intercollegiate athletes (N=31) were interviewed regarding their personal experience with athletic injury. The interviews allowed the athletes to describe their experiences with injuries and also allowed differences to be determined regarding each individual injury experience. Each participant completed a general information form, an in-depth interview, a follow-up interview, and a separate interview to collect participant feedback on the results of the research. Female athletes had more negative experiences with coaches regarding their personal injuries. Female athletes were also less likely to engage in social interactions with significant others as a result of their injury. The effect that injury would have on future health was also a concern of more women than men.

A qualitative approach was taken by Granito (2001) to study the experiences that intercollegiate athletes have in response to injury. Injury was examined from the perspective of injured athletes and student trainers. Four focus groups were established. Student trainers,

who worked directly with the athletes, were assigned to the first two focus groups while the other two focus groups consisted of injured NCAA Division II athletes. After each participant was informed of the purpose of the focus group, each focus group was introduced to the moderator and to each other. Then the focus group was interviewed using open-ended questions regarding experiences with athletic injuries. Afterwards, seven themes, including personal factors, effects on relationships, sociological aspects, physical factors, daily hassles, feelings associated with injury, and rehabilitation, were established. Many elements, such as cognition, were found to influence personal experiences with athletic injury.

Psychological effects of injury and illness on sport were studied by Bianco, Malo, and Orlick (1999). An interview guide, including a warm up question, three focused main questions with probes, and a wrap up question, was developed and pilot tested on five athletes. After the pilot study, a total of 12 current and former members of the Canadian Alpine Ski Team, two of which had recovered from a debilitating illness and 10 of which had recovered from a sport injury, were examined during a preseason training camp. The skiers felt that the findings accurately reflected their perceptions of their injuries or illnesses on sport. Nomothetic analyses revealed three phases. The injury phase included a time when the athletes had to decide whether or not to receive treatment. This is a time when athletes may have experienced disappointment due to their inability to perform. Good coping skills, the type of injury, knowledge of or experience with an injury, timing of the injury, and team standing all may have influenced the athletes' perceptions of the injury or illness and progression throughout the recovery stages. The second phase, rehabilitation-recovery phase, depended on the nature of the illness or injury. For instance, some athletes faced with

career ending injuries experienced a great deal of emotional pain. In general, the participants were more tolerant of the physical difficulties of rehabilitation in order to produce a quicker recovery. Progress in recovery was the best source of motivation. The return to full activity phase was both physically and psychologically challenging. This phase began as the athlete decided to return to skiing and continued into the first season. Athletes often rushed their rehabilitation to return to skiing despite medical recommendation. Also, some athletes experienced feelings of apprehension, while others had high confidence in their physical readiness. Each participant experienced less than optimal results during their first season back.

Quachenbush and Crossman (1994) attempted to examine the four emotional stages that coincide with athletic injury. Participants included 25 male and female competitive and recreational athletes who had experienced and recovered from an athletic injury within the last year. A scale ranging from 1, *major* (more than three weeks away from participating), to 4, *no effect on training*, was used by the participants to determine level of injury severity. The participants were then given a three-part questionnaire consisting of demographic information, information regarding the severity of the injury, and four checklists in which the participants were to identify specific emotional adjectives experienced during the injury stage. Recreational athletes were found to be more positive than athletes competing at high levels of competition. Negative emotional responses decreased from the onset of the injury to returning to play, while optimism increased through the stages. Women were found to be more emotional, both negatively and positively, than men. Optimism was also higher among women than men throughout the injury stages.

Tracey (2003) examined emotional responses to injury and rehabilitation. Participants included 10 Division III athletes. The participants sustained an injury that kept them out of play for at least seven days. A demographic questionnaire, an open-ended questionnaire asking questions concerning emotions relating to injury, and an in-depth interview initially 24-72 hours post-injury onset was administered to each participant. The open-ended questionnaire was administered at injury onset, one week post-injury, and three weeks post-injury. Interview one brought about many emotions such as anger, depression, and a lowered self-esteem and some even felt a loss of independence. Initially many participants reported enjoying the extra attention received due to injury, but soon become frustrated. Interview two found that many participants were affected by the visual nature of the injury, whether it be a swollen limb, or crutches. Many become frustrated, while others transferred time and energy into their academic work. The participants also stated being more fearful of missing out on practice than of re-injuring themselves. The participants reported remaining close with their teammates during their recovery. This aided emotionally because the participant still felt a part of the team. During interview three, participants noted that talking with someone regarding their emotions was quite helpful. Those participants who returned to play or were close to returning reported they had experienced a great improvement with their emotions. Those participants who returned to play three weeks post-injury attributed their affect to teammates. Participants who had experienced a more serious injury and would remain out of play for a much longer period of time reported being frustrated, but capable of thinking more positively about rehabilitation. With thoughts of returning to play and/or practice, these participants felt more confident.

Athletic Identity

The role an athlete takes when participating in intercollegiate sports was examined by Miller and Kerr (2003). Canadian senior athletes (N=8) participating in the sports of basketball, volleyball, track and field, and swimming were selected to take part in the study. Individual interviews, lasting 90-minutes, were held for each of the participants and consisted of open-ended questions. During this time, participants were asked to reflect upon their experiences as student-athletes as well as to identify the various roles they play in their lives such as friend and family member. Athletic, academic, and social roles were established and found to be linked to one another. Over-identification with the role of an athlete occurred during the first three years of college. These athletes entered college with aspirations of becoming professionals or amateurs in the designated sport. Participants, especially during the first year of college, did not spend as much time with academics as with athletics, therefore doing poorly academically. During the second half of the participant's sophomore year and the entire junior year, the ability to commit to both academics and athletics improved, although still deriving much identification from the athletic role. During the participants' fourth and fifth year of college, academics often become more important, as they realized that they were not going to participate in sport at a higher level.

The athletic identity of interscholastic and collegiate athletes (N=221) was explored by Childs (2002). Participants completed the Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001) and a demographic questionnaire prior to or following a practice session. Collegiate athletes scored higher for athletic identity than high school athletes. Athletes planning to continue advancing in athletics scored higher for athletic identity. No

significant differences were found for gender, race, individual sport participants and team participants, or one sport participants and multiple sports participants.

Wiechman and Williams (1997) sought to determine if athletic identity would increase throughout high school while also examining gender difference in athletic identity, competitiveness in conjunction with athletic identity, the athletic identity of minorities versus Caucasians, and expectations of higher level sports participation and its association with athletic identity. The AIMS was administered to 389 (168 men, 218 women) high school athletes participating in the sports of basketball, soccer, and wrestling. Athletic identity was not found to increase throughout high school. A significant difference was found between freshmen and varsity athletes indicating varsity athletes, being more competitive, may have a stronger athletic identity. Men were found to have a significantly stronger athletic identity than women. Mexican-Americans had significantly stronger athletic identities than both African-American and Caucasians, and Caucasians had significantly stronger athletic identities than African-Americans. Participants who suggested they expected to play sports at a higher level scored significantly higher for athletic identity than those who did not expect to continue advancing athletics.

Athletic Identity and Injury

Sparkes (1998) performed a case study on one of his students, Rachael, who had a strong athletic identity, which acts as, what the researcher called, an Achilles' heel. Since the age of 11, Rachael recalls being an extraordinary athlete, winning cross-country races and later becoming an outstanding horseback rider. Beginning at the age of 14, Rachael had begun experiencing back problems, as a result of a large tumor in her lower back. Complications

during surgery resulted in many hospital visits. Rachael then contracted meningitis during one of her stays in the hospital. The disease made it unlikely that she will ever ride again. Intrigued by the situation, Sparkes received Rachael's permission to conduct interviews with her that would investigate her experiences before, during, and after her illness. Rachael was interviewed nine times, each consisting of several open-ended questions, which allowed Rachael and Sparkes to share experiences with one another. Through these interviews, many themes emerged. Rachael also would write of her illness and its influence on her life. Due to the impact the illness has had on her life, Rachael felt loss regarding her former relationship between her body and self. Rachael was reported as saying, "I feel like I have lost my identity." Her athletic identity had allowed her body to perform the tasks she trained for with ease. Because she had such a strong athletic identity, this has made it difficult for Rachael to find a role to identify with. Due to the high level at which Rachael was performing, she feels betrayed by her body and resentful of her illness. As was clarified by Rachael's writings, she was not allowing herself to find a replacement in her life for riding. Instead, she focused on returning to her sport, which was very unlikely. Until Rachael came to terms with the effects of her illness, self-change will remain problematic.

Brewer (1993) conducted four studies to examine the relationship between athletic identity and sport injury. These studies hypothesized that athletes who maintain a strong athletic identity would be more likely to become depressed following athletic injury than those who do not strongly identify with the role of an athlete. The first study consisted of 109 students from a southwestern institution each of which was administered the AIMS. An imagery session was conducted using 85 participants. The participants were to imagine the

main sport in which they participated and then that they had experienced a career ending injury. Afterwards, they were to complete the Profiles of Mood States Depression Scale (POMS-D; McNair, Lorr, & Droppleman, 1971), which measures depressed mood. A control group consisting of the 24 remaining participants was instructed to complete the POMS without using imagery. Depression was highly correlated to the athletic identity for imagery participants and negatively correlated for those in control group.

The second study consisted of 131 participants from a northeastern institution. Prior to a class session, the participants were instructed to complete the AIMS. The class was then randomly assigned to either an injury condition (n=68) or course failure (n=62). Both groups completed the POMS with the injury group receiving written instructions to complete the questionnaire in a manner that would indicate how they would feel after a career-ending injury and the course failure group receiving written instructions to complete the questionnaire in a manner that would indicate how they would feel after failing a class that would prevent them from majoring in their intended field of study. Scores for the POMS-D were higher for the course failure participants than for the injury participants.

The third study consisted of 121 injured athletes from the southwestern United States. Injury severity was rated on a 3-point scale (1=mild, 2=moderate, 3=severe) by their physician. Current injury status was also rated using a 7-point scale (1=acutely injured, 7=completely recovered) (Brewer, 1993). The AIMS was administered, along with the Physical Self-Perception Profile global physical self-worth subscale (PSPP-G; Fox & Corbin, 1998), the Social and Athletic Readjustment Rating Scale (Bramwell, Masuda, Wagner, & Holmes, 1975), the Beck Depression Inventory (Beck, 1967), and the POMS-D. The

questionnaire packet was given to the participants by their physicians to take home following an office visit. The AIMS was positively correlated with depression while the PSPP-G was negatively correlated with depression.

In the fourth study, 90 football players from a western university were examined. The questionnaire packets were similar to those given to the participants in the third study. The participants were separated into currently injured (n=15) and uninjured (n=75). Athletic identity was positively correlated with depression for the injured participants and negatively correlated with depression for the uninjured participants (Brewer, 1993).

The idea that retirement from sports affects athletic identity was examined by Webb and Nasco (1998). A questionnaire was completed by 51 participants who responded to open-ended questions regarding their athletic background and the reason for retirement from that sport. The remaining section of the questionnaire examined athletic identity, the psychological responses that occur due to retirement, and various variables associated with retirement. Categories were established based on responses from the open-ended questionnaires regarding reasons for retiring from sport. These categories consisted of career-ending injuries, the inability to compete at the next level, and personal choice. There was no significant relationship between athletic identity and life satisfaction, nor was there a significant relationship between athletic identity and uncertainty with the future. A positive correlation did exist, however, between athletic identity and difficulty with retirement. Athletes experiencing career-ending injuries were found to have problems when retiring. These athletes felt a great uncertainty about the future, with self-value negatively correlating

with a sense of uncertainty about the future. A strong negative correlation was also found to exist between self-value and athletic identity.

Sport-Confidence

Boyd and Yin (1999) conducted self-confidence research discussing the cognitive-affective and behavioral correlates of self-schemata in sport. Participants included 165 undergraduate students who were enrolled in first aid and safety courses in a southern university. The Sport Self-Schemata (Markus, 1997) was administered to evaluate whether a participant was schematic for baseball, schematic for not playing baseball, or aschematic. The Baseball Knowledge Test (Nevett et al., 1994) was used to test the participants sport-specific knowledge of baseball and/or softball. The test also examined general knowledge of the rules and procedures used in baseball and softball. Sport-confidence was assessed using the Trait Sport-Confidence Inventory (TSCI; Vealey, 1986). Sport affect was also measured to determine each participant's level of enjoyment with the sport. Participants indicated the number of years involved in baseball or softball, how frequently they had participated in the past 30 days and six months, and intention to play in the next 30 days and six months. Participants were placed into a schematics, non-schematics, aschematics, or those whose responses did not fit into any other category group depending upon responses on the self-schemata scale. The 47 participants who fell into one of the first three groups were utilized in the data analysis. Schematics were found to be more knowledgeable regarding baseball than non-schematics. Schematics also scored higher for sport-confidence than the non-schematics and aschematic counterparts. Schematics were found to have an overall higher sense of enjoyment that non-schematics and aschematics, while aschematics

were higher than non-schematics. Schematics were found to have participated in baseball and/or softball more years, participated more within the past 30 days, participated more within the past six months, and anticipated they would play more within the next 30 days and six months than non-schematics and aschematics.

Vealey et al. (1998) sought to examine self-confidence within the realm of sports throughout four phases, while also attempting to develop both a reliable and valid method for measuring sources of sport-confidence. Phase one developed 42 items to be representative of seven sources of sport-confidence (performance/mastery, ability/outcomes, preparation/effort, social support, vicarious experience, psychological strategies, and uncontrollable external sources). This 42 item questionnaire was named the Sources of Sport-Confidence Questionnaire (SSCQ). Following the SSCQ, a section was created allowing participants to openly list any other sources of sport-confidence experienced. Phase two consisted of 137 Division I athletes who completed the SSCQ and the open-ended question developed in Phase one. Physical/mental preparation was developed as another source of sport-confidence. Phase three included 187 Division I athletes who participated in individual sports. Each participant completed the SSCQ, the TSCI, and the Competitive Orientation Inventory (Vealey, 1986), which assesses an individual's feeling of winning or losing, based on the perception of their performance. The SSCQ consisted of 51 items which included each of the eight subscales for the sources of sport-confidence. The SSCQ included the open-ended question following the 51 items. Social support brought about a significant difference among gender. Women viewed physical self-presentation and social support to be a more important source of sport-confidence than did their male counterparts. Due to how

women are perceived in society, female athletes derive a great deal of social acceptance based on approval of their femininity. Women tend to exhibit lower levels of sport-confidence in relation to body image and perceptions of body image. Physical self-preparation was found to be a significant predictor of female trait sport-confidence, as well as environmental comfort and physical self-presentation. Physical/mental preparation was found to be a significant predictor of trait sport-confidence in males, as well as external environmental. Phase four included 208 male high school basketball players. Each participant completed a modified version of the SSCQ, the TSCI, and the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989), which measures intrinsic motivation. The revised SSCQ included nine sources of sport-confidence (mastery, demonstration of ability, physical/mental preparation, physical self-presentation, coach's leadership, vicarious experience, environmental comfort, and situational favorableness). Approximately one hour prior to a competition, the Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Vealey, & Burton, 1990) was administered. The CSAI-2 measures precompetitive levels of cognitive and somatic anxiety as well as state self-confidence. Women, more so than their male counterparts, were found to perceive social support as the most important source for self-confidence. Physical/mental preparation was the only predictor of trait sport-confidence. Athletes who had high trait sport-confidence were found to be more intrinsically motivated than those low in trait sport-confidence. Participants high in trait sport-confidence had a lower perceived tension and lower levels of cognitive and somatic state anxiety than those low in trait sport-confidence. Athletes higher in trait sport-confidence also rated higher for state sport-confidence. Phases two, three, and four all

indicated that mastery, social support, physical/mental preparation, and demonstration of ability were the top sources of sport-confidence. Throughout the four phases, the SSCQ was found to be both valid and reliable as a multidimensional measure of sources of sport-confidence.

Grove and Heard (1997) examined the optimism and sport confidence of 213 athletes experiencing a slump in performance. The athletes were divided into two groups, 90 completed the Life Orientation Test (LOT; Scheier & Carver, 1985), which measures dispositional optimism, and 123 completed the TSCI. Each participant also completed the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990a). The CISS is a 48-item self-report inventory that explores task-oriented, emotion-oriented, and avoidance-oriented styles of coping. A positive correlation was found between task-oriented coping for both the LOT and the TSCI. A negative correlation was found for both the emotion-oriented coping and the avoidance-oriented coping for both the LOT and the TSCI.

Sport-Confidence and Injury

Responses to season-ending injuries were examined by Udry, Gould, Bridges, and Beck (1997). Interviews were administered to 21 members of the US Ski team A, B, and C alpine and freestyle members, each of which had experienced a season-ending injury within the past four years. The 60-90 minute interview covered such areas as background information, reactions to injury, attributions for injury recovery, support systems, and advice to other injured athletes. The themes were condensed into four areas that include injury processing and awareness, emotional behavior, optimism, and other. Responses elicited included awareness of the pain, awareness of the injury or that something was wrong with

their body, as well as questions about their condition. Many of the participants experienced feelings of anger and worry. Some participants engaged in pessimistic thoughts, however, optimistic thoughts were attributed to future oriented athletic goals, which may have aided in injury recovery progress. To categorize thoughts, themes were developed regarding benefits to season-ending injuries including personal growth, performance enhancement, physical/technical development benefits, and none. Injury allowed perspective to be gained, time to develop other areas of their life, increase confidence, and increased awareness of the technical aspect of skiing.

Johnston and Carroll (1998) sought to examine the emotional responses to injury by conducting 16 separate unstructured interviews of severely injured athletes. The injury must have occurred within the previous 12 months or the athletes were currently injured and were unable to return to sport for at least 21 days. Each participant was to describe their injury from injury onset to full return to play or, if still injured, up until the time of the interview. Also, a demographic questionnaire was completed. Many athletes did not immediately realize the severity of their injuries unless they had a previous experience with the injury. At the beginning of rehabilitation, participants were often aware of the incapacitation and lack of mobility. This was due to the athlete's increased awareness of how their injury was disrupting their daily activities and involvement with sport. Many of the athletes felt they were not progressing successfully throughout rehabilitation. This often brought on depression, frustration, and apathy, which negatively affected adherence to rehabilitation. Lower levels of sport-confidence were exhibited as the athletes gradually re-entered sports. These athletes, often seen as being hesitant or holding back, feared reinjury or possible

injury to another body part. Fear of reinjury was especially seen with athletes who had experienced the same previous injury. To alleviate this fear, athletes would test out their injured body part in a sport situation. The athletes who performed well at this task reported an increase in confidence.

Social Support Measurement

Richman, Rosenfeld, and Hardy (1993) developed a method for measuring a multidimensional conceptualization of the social support process. There are three types of social support: tangible, informational, and emotional. Of these three types, eight forms of social support have been established: listening support, emotional support, emotional challenge, reality confirmation support, task appreciation support, task challenge support, tangible assistance support, and personal assistance support. These eight forms of social support can be seen as being provided by both individuals and groups. The social support process involves four essential elements: the recipient of support, the provider of support, the interactional exchange process between recipient and provider, and the outcomes of the exchange process. The Social Support Survey-Clinical Form assesses five variables for each of the eight forms of social support: initials and relationship for each person who provides the support, satisfaction with the support received, difficulty of obtaining support, and perceived importance of the support. Content validity, concurrent validity, construct validity, and reliability were established for the various types of social support.

Social Support and Injury

Attitudes of dancers returning to ballet following an injury were examined by Macchi and Crossman (1996). Demographic information was completed by 25 professional

ballet dancers. Each participant reported having at least one previous injury. Injury was defined as time away from practice and performance, usually requiring medical attention. The dancers were then interviewed both during the rehabilitation process and during their return to ballet to obtain a detailed description of attitudes after being injured. Following injury, attitude did not change for 15 dancers, while for 11 dancers, attitudes changed. The interview indicated that dancers were more careful when dancing, conscious of technique, exercised and stretched more, and were more aware of their bodies. The dancers responded negatively at the onset of the injury, being fearful of their careers and reaction of their social support system. During the rehabilitation process, the dancers' emotions ranged from optimism to pessimism, illustrating that athletes react differently to injury. Fellow dancers were shown to be the best source of support, while teachers often were viewed more negatively. Only a few dancers stated their therapist was an important part of the social support network.

Social support was examined by Ford, Eklund, and Gordon (2000) to observe life change and time lost resulting from athletic injury. It was predicted that social support would have a significant impact on levels of life stress when injured. Previously injured athletes were selected from seven athletic teams competing in six sports (Australian football, basketball, cricket, field hockey, netball, and volleyball) at the state, national, or international level. Injury was defined as a deficit occurring in practice or a game disallowing the athlete to participate for at least one day. A variety of questionnaires, including the SSS (Richman et al., 1993), were administered and completed during the respective pre-season, except for the sport of volleyball which was conducted during a

six-week training period of no competition. Social support quality was significantly correlated with time missed due to injury. Social support number and importance was correlated with positive and total life change, while social support importance was correlated with object loss. Social support was shown to encourage and motivate individuals. Athletes receiving inadequate amounts of social support may be more susceptible to injury (Ford, Eklund, & Gordon, 2000).

Johnston and Carroll (1998) interviewed 12 participants to assess various types of support received during rehabilitation. Each participant was given a list of eight types of social support along with a definition that was created in previous research (shared social reality, technical challenge, technical appreciation, listening support, emotional comfort, emotional challenge, material assistance, and practical assistance). Interviews occurred at the beginning, middle, and end of rehabilitation for each of the participants. The participants were asked to rank the eight types of social support in the order received and then in the order they wished support was received. Participants also listed who was the main provider of the support and the ideal provider of the support, and for each, their relationship with that person. During each interview, the participant was asked to identify how each type of support was provided and which types of support were important and why. Support received was found to be similar to ideal support of the participants. Listening support and shared social reality were found to be predominant at the beginning of rehabilitation. Technical challenge and technical appreciation were highest for the middle and end of rehabilitation. Material assistance was rated lowest for all three states of rehabilitation. While informational types of support increased over time, emotional and practical types of support,

such as listening support, decreased. Injured athletes were the main providers of informational support at the beginning of rehabilitation, but at the end of rehabilitation the physiotherapist, teammates, and coaches were the main providers of information support. At the beginning of rehabilitation, emotional support was provided by those closest to the injured athlete, including friends, family, coaches, other injured athletes, and medical personnel. Participants with severe injuries or those having a difficult time with rehabilitation found emotional support most important. Men with less severe injuries did not view emotional support as that important, while women with severe injuries found emotional support to be quite important when rationalizing thoughts and emotions. During the middle and end of rehabilitation, the importance for emotional support decreases, however, for those athletes with more severe injuries, emotional support is still important. At these stages, it is important for those providing emotional support to make sure that the athlete does not return too quickly to play. At the end of rehabilitation, those providing emotional support are coaches, physiotherapists, and friends in sport.

Satisfaction with Support Received

Satisfaction with social support as well as the types of support received were examined by Robbins and Rosenfeld (2001). Participants included 35 collegiate athletes each of whom had experienced some type of injury ranging from either minor to severe. Participants missed at least three days of practice or competition. A modified version of the SSS (Richman et al., 1993) was completed by each of the participants. The survey elicited responses regarding the support provided by the head coach, assistant coach, and athletic trainer, the participant's satisfaction with the support received, and the perceived importance

of the support received both pre-injury and during rehabilitation. If the participant did not receive support then they were advised not to continue with the satisfaction and importance portion of the survey. Athletes were shown to be more satisfied with the amount of listening and emotional support, and task appreciation received from athletic trainers both before and after injury occurred than with that provided by the coach and assistant coach. Likewise, this support was viewed by the athletes as important in the contribution to well-being.

The degree in which support is received, expected, and the satisfaction with that support was studied by Barefield and McCallister (1997). Participants included 85 Division I athletes who had received rehabilitation for an injury occurring during the present school year who were asked to participate in the study. A questionnaire was constructed based on Rosenfeld, Richman, and Hardy's (1993) SSS. The questionnaire measured eight types of social support (listening support, emotional support, emotional challenge, reality confirmation, task appreciation, task challenge, tangible assistance, and personal assistance). For each type of social support three questions were devised asking the participant's perception of the support received, the expectation of support, and the satisfaction with the support received. The participants were to answer these questions regarding both the athletic training staff and student athletic training staff. No significant differences were found regarding the amount of support expected and the amount of support received from any of the athletic trainers. No significant difference was found for satisfaction between the athletic trainers and the student staff. Listening support and task appreciation were expected and received from both the athletic training staff and the student trainers. Satisfaction for these

types of support was rated highest. Tangible assistance and personal assistance were received less often, but also expected less often.

Adherence to Rehabilitation

Adherence was examined by Brewer et al. (2003). Participants included 85 rehabilitation patients that underwent ACL reconstruction. The Sport Injury Rehabilitation Beliefs Scale (SIRBS; Taylor & May, 1996) was administered to determine components of protection motivation theory. The SIRBS includes such items as, *I see this injury as a serious threat to my sport/exercise involvement.* Adherence was assessed by measuring rehabilitation session attendance and also by administering the Sport Injury Rehabilitation Adherence Scale (SIRAS; Brewer et al., 2002). Also, participants self-reported icing and exercise completion. Severity was significantly correlated with none of the adherence variables, while attendance was significantly correlated with none of the protection motivation theory variables. Susceptibility, treatment efficacy, and self-efficacy were all positively correlated with SIRAS, completion of home exercises, and icing.

Pizzari, McBurney, Taylor, and Feller (2002) studied various variables that influence adherence to rehabilitation after ACL reconstruction. Participants included 11 ACL-reconstruction patients. Interviews were conducted to allow each participant to expand on their experience with the ACL injury. Environmental (time social support and comfort of the rehabilitation clinic), physical (motivation and fear), and psychological (greater sense of enjoyment regarding rehabilitation and self-direction) factors have been found to be predictors for adherence.

The use of psychological skills in response to rehabilitation adherence was studied by Scherzer, et al. (2001). Participants included 54 patients (37 men and 17 women) undergoing rehabilitation succeeding ACL reconstruction. Each participant was administered the Sports Injury Survey (SIS; Ievleva & Orlick, 1991) five weeks after surgery. To assess their individual use of psychological skills during rehabilitation the goal setting, healing-imagery, and positive-self-talk subscales of the SIS were reviewed. Adherence to rehabilitation sessions was deducted using the following four methods: rehabilitation adherence record, administration of the SIRAS, and participant records of home rehabilitation exercises and icing. An accelerated rehabilitation protocol was administered to each of the ACL patients to encourage increased range of motion and strength. Participants who reported using goal setting reported better adherence to home and therapy session rehabilitation programs. Participants who reported using self-talk also were reported as having better adherence to rehabilitation.

Brewer et al. (2000) studied attribution styles and their effects on rehabilitation adherence. Competitive athletes, recreational athletes, and nonathletes (N=80), all of which underwent ACL reconstruction, participated in the study. Participants were asked to rate their recovery progress, provide open-ended attributions concerning recovery, and rate their open-ended attributions by completing the Revised Causal Dimension Scale (McAuley, Duncan, & Russell, 1992) five weeks postsurgery. Adherence was assessed by dividing the number of rehabilitation sessions attended by the number of scheduled rehabilitation sessions and also by scores derived from the SIRAS. The SIRAS was completed at each rehabilitation session attended by the participant. Stability and personally controllable

factors were credited by those who perceived themselves as recovering quickly more so than participants who perceived themselves as recovering slowly.

Satisfaction and Adherence

Coping strategies, along with satisfaction with social support received during rehabilitation were examined by Johnston and Carroll (2000). Participants included 93 injured athletes who had sustained an injury restricting participation in play and/or practice for a minimum of 21 days. Questionnaire packets were distributed at the beginning, mid-point, and end of rehabilitation and included a personal data questionnaire, the Coping Response Inventory-Adult Form (Moos, 1993), and visual analog scales. The physiotherapist completed questionnaires pertaining to the severity of the injury, expected length of treatment, adherence, and recovery. Results indicated those who were involved in three hours of sport or longer per week depended more on their social support network as a means for coping than did those who participated in three hours or less. Satisfaction with support was rated as being lower at the beginning of rehabilitation than during the middle or end. Those more highly involved with sport were rated as better adherents by the physiotherapist. Adherence, as rated by the physiotherapists during the middle of rehabilitation, was positively correlated with satisfaction of practical support received at the beginning of rehabilitation, as well as satisfaction with emotional support in the middle, and problem-solving coping at the end of rehabilitation. On the other hand, those possessing an emotional discharge coping style were seen as unsuccessful adherents. Women, more so than men, were seen as more satisfied with the amount of emotional and practical support

received at the beginning of rehabilitation and with the amount of practical support received at the end of rehabilitation.

Athletic Identity/Social Support/Injury

Green and Weinburg (2001) hypothesized that an individual with a strong athletic identity, poor coping skills, and a lack of social support would suffer more greatly from the negative psychological impacts of injury along with incurring low levels of physical self-esteem. Participants (N=30) were recruited from orthopedic, sport medicine, and physical therapy facilities. Injury was classified as at least a six week discontinuation of regular, 30 minutes or longer, physical activity. A packet of questionnaires was mailed to each participant. A significant relationship was found between strong athletic identity and strong feelings regarding physical condition. It was found that the participants who felt strongly about their role as athletes also valued their physical condition and level of exercise. There was also a significant relationship between perceived satisfaction with a social network and mood disturbance following an injury. Individuals who were more satisfied with the social network had less total mood disturbance following an injury.

Fortunato and Marchant (1999) interviewed 30 Australian football players that had retired due to injury within the past 18 months. The interview guide included probes relating to both football and retirement and included topics ranging from athletic identity to social support as well as satisfaction with football career. The interviews revealed perceptions of loss of athletic identity, lack of control and lack of preparation to retire, financial issues, and social support. Many participants felt that although they received support from family and friends, many supporters did not understand what the participants were experiencing. Many

of the participants experienced loss and were angry about the loss of athletic identity and inability to reach their athletic goals.

The role of social support following athletic injury was investigated by Ford and Gordon (1999). Interviews consisting of both open-ended and closed questions were administered to four participants (two male and two female). Both male participants participated in Australian football, while one female participant participated in volleyball and the other in basketball. All participants were knee surgery candidates. The female interviews were conducted before their surgery, while the men received their interviews post-surgery. Because of the surgery, athletes felt a great loss of athletic identity and voiced concerns in regards to position on the team and standing in athletic clubs. Injury, however, allowed the participants to engage in other life activities. The participants were able to develop new skills outside of sport as well as new relationships. Strong social support networks aided effective coping. Encouragement helped to motivate participant rehabilitation, increase self-perceptions, and increase optimism.

Dysfunction/Social Support/Injury

Ford and Gordon (1998) conducted a two-part study concerning behaviors and emotions elicited during an ATC and injured athlete interaction. In the first part of the study, 10 trainers (five males and five females) were asked to complete a number of open-ended questions, as well as rate various psychological skills and problems that may occur during an ATC and athlete interaction. In part two of the study, the open-ended questionnaire from part one was mailed to 350 trainers and athletic therapists. Anxiety and fear, as well as noncompliance and wanting to return to play as soon as possible, were among the

dysfunctional emotions and behaviors that were most frequently noted. Coping behavior of the injured athlete was found to determine the amount of support and attention provided by the trainers and therapists.

Social Support/Sport-Confidence/Adherence/Injury

The effect of social support on confidence of injured athletes was assessed by Magyar and Duda (2000). Participants included 40 (17 male and 23 female) injured intercollegiate athletes from Division I, II, and III Midwestern institutions. Athletes sustained at least one week of rehabilitation prior to participation in the study. The first of three questionnaire packets was administered to the athletes at least two days prior to their return to play. Included in the questionnaire packet were the Task and Ego Orientation in Sport Questionnaire (Duda & Nicholls, 1992), the Social Support Questionnaire (SSQ; Duda, Smart, & Tappe, 1989), the M-SSCQ (Vealey, Hayashi, Garner-Holman, & Giacobbi, 1986), a modified version of the State Sport-Confidence Inventory (M-SSCI; Vealey, 1986). A second and third packet, including the SSQ, M-SSCQ, and M-SSCI were administered during the mid-point of rehabilitation and the day before the athlete returned to play. Although no change was observed in perceived social support throughout rehabilitation, confidence regarding return to play increased as rehabilitation progressed. Athletes who had reported receiving high levels of social support from family, teammates, and ATC's, were more likely to believe messages relating to self-confidence from the trainer. These athletes also noted personal mastery and physical and mental preparation as sources for self-confidence. Social support aided the overall progress of these athletes staying focused during rehabilitation.

Social Support/Sport-Confidence/Satisfaction/Injury

Relaxation and guided imagery, as used in a mental training program, were implemented and assessed to determine affects occurring during recovery from injury (Handegard et al., 2004). Participants (N=2) included one soccer player and one baseball player from a southeastern NCAA Division I institution. The criterion for inclusion was that the participant must sustain a sport related macrotrauma injury causing the participant to miss practice or competition the day following the injury. Multiple measures, including a modified version of the TSCI, a modified version of the SSCI, a modified version of the SSS, and the Sport Imagery Evaluation (SIE; Vealey & Greenleaf, 2001) were administered. Each participant also took part in an exit interview assessing the mental training program's impact on rehabilitation, as well as confidence in their ability to return to play, perceived social support, fear of re-injury, and the overall rehabilitation experience. Each participant kept a daily imagery log. Each participant individually attended three separate meetings with the researcher. The packet containing the M-TSCI, M-SSCI, M-SSS, SIE, and a demographic questionnaire were administered during the first meeting. Individualized mental training programs were created for each of the participants. The participants were to use imagery before or after physical therapy, as well as throughout the day. After the second and third imagery training session, a second packet containing the SIE was administered. A third and fourth packet containing the SIE, M-SSCI, and the M-SSS were administered at the mid-point and end of rehabilitation. After the athlete had complete rehabilitation and had returned to play, a fifth packet containing the M-TSCI, M-SSCI, M-SSS, and the exit interview were administered. Both participants reported having a high trait sport-confidence,

although that confidence did diminish throughout the rehabilitation process. State sport-confidence increased throughout rehabilitation. Participant one noted that the initial onset of injury had an effect on self-confidence. Prior to injury, both the head coach and assistant coach were perceived as eliciting each type of social support, with participant one being most satisfied with listening support and least satisfied with reality confirmation. Levels of support provided by the head coach, as perceived by the participant, dropped throughout the rehabilitation phase. The assistant coach was perceived as providing listening support throughout all stages of injury rehabilitation. The ATC was not considered a source for social support prior to participant one's injury, but afterward was perceived as providing listening support, task appreciation, task challenge, and reality confirmation throughout all phases of injury rehabilitation. For both participants, a positive correlation was observed between the amount of support provided by the ATC during rehabilitation, the participant's satisfaction with that support, and the lack of fear when returning to play. A positive relationship may also exist between the amount of social support received, the satisfaction with that social support, and maintaining or increasing levels of self-confidence for both participants. For participant two, the head coach was perceived as providing only emotional challenge and reality confirmation prior to injury. Throughout the rehabilitation process, listening support and emotional support were provided and perceived as satisfactory. The assistant coach was perceived as providing listening support, task appreciation, and task challenge prior to the onset of injury. Participant two perceived listening support, task appreciation, and emotional support from the assistant coach during the rehabilitation process, but not task challenge, emotional challenge, or reality confirmation. The ATC was

perceived as providing listening support both prior to and during the rehabilitation phase. Task appreciation, task challenge, and emotional support were each perceived as being provided during injury rehabilitation, while emotional challenge and reality confirmation were not provided. Fear was not elicited when returning to play. A positive relationship was found between satisfaction with perceived social support and lack of fear when returning to play.

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APPENDIX C

Athletic Identity Measurement Scale

Athletic Identity Measurement Scale (AIMS)

Please circle the number that best reflects the extent to which you agree or disagree with each statement regarding your sport participation.

1. I consider myself an athlete.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. I have many goals related to sport.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Most of my friends are athletes.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Sport is the most important part of my life.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. I spend more time thinking about sport than anything else.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. I feel bad about myself when I do poorly in sport.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. I am very depressed now that I am injured and cannot compete in sport.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

APPENDIX D

Trait Sport-Confidence Inventor

Trait Sport-Confidence Inventory

Think about how self-confident you are when you compete in sport. Answer the questions below based on how confident you generally feel when you compete in your sport. Compare your self-confidence to the most self-confident athlete you know.

Please answer as you really feel, not how you would like to feel. Your answers will be kept completely confidential.

When you compete, how confident do you generally feel? (circle number)

1. Compare your confidence in your ability to execute the skills necessary to be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

2. Compare your confidence in your ability to make critical decisions during competition to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

3. Compare your confidence in your ability to perform under pressure to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

4. Compare your confidence in your ability to execute successful strategy to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

5. Compare your confidence in your ability to concentrate well enough to be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

6. Compare your confidence in your ability to adapt to different game situations and still be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

7. Compare your confidence in your ability to achieve your competitive goals to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

8. Compare your confidence in your ability to be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

9. Compare your confidence in your ability to consistently be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

10. Compare your confidence in your ability to think and respond successfully during competition to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

11. Compare your confidence in your ability to meet the challenge of competition to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

12. Compare your confidence in your ability to be successful even when the odds are against you to the most confident athletic you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

13. Compare your confidence in your ability to bounce back from performing poorly and be successful to the most confident athlete you know.

Low				Medium				High
1	2	3	4	5	6	7	8	9

APPENDIX E

Modified Form of the Social Support Su

Modified Social Support Survey

LISTENING SUPPORT: People who listen to you without giving advice or being judgmental.

1. In general, to what degree did members of the athletic training staff provide you with listening support?

   very little support provided 1 2 3 4 5 a great deal of support provided

2. In general, to what extent did you expect or hope to receive listening support from members of the athletic training staff?

   very little Expectation 1 2 3 4 5 very high expectation

3. In general, how satisfied are you with the overall quality of listening support you received from members of the athletic training staff?

   very dissatisfied 1 2 3 4 5 very satisfied

EMOTIONAL SUPPORT: People who provide you with comfort and care and are on your side.

1. In general, to what degree did members of the athletic training staff provide you with emotional support?

   very little support provided 1 2 3 4 5 a great deal of support provided

2. In general, to what extent did you expect or hope to receive emotional support from members of the athletic training staff?

   very little Expectation 1 2 3 4 5 very high expectation

3. In general, how satisfied are you with the overall quality of emotional support you received from members of the athletic training staff?

   very dissatisfied 1 2 3 4 5 very satisfied

TASK APPRECIATION: People that acknowledge your efforts and express appreciation for the work that you do.

1. In general, to what degree did members of the athletic training staff provide you with task appreciation?

   very little support provided 1 2 3 4 5 a great deal of support provided

2. In general, to what extent did you expect or hope to receive task appreciation from members of the athletic training staff?

   very little Expectation 1 2 3 4 5 very high expectation

3. In general, how satisfied are you with the overall quality of task appreciation you received from members of the athletic training staff?

   very dissatisfied 1 2 3 4 5 very satisfied

PERSONAL ASSISTANCE: People that provide services or help.

1. In general, to what degree did members of the athletic training staff provide you with personal assistance?

   very little support provided 1 2 3 4 5 a great deal of support provided

2. In general, to what extent did you expect or hope to receive personal assistance from members of the athletic training staff?

   very little Expectation 1 2 3 4 5 very high expectation

3. In general, how satisfied are you with the overall quality of personal assistance you received from members of the athletic training staff?

   very dissatisfied 1 2 3 4 5 very satisfied

APPENDIX F

Modified Form of the Outcomes Measurement Scale

Modified Outcomes Measurement Scale

Please rate your capacities specific to the injury for which you have received treatments. Please answer, to the best of your knowledge, questions pertaining to three phases of your rehabilitation process: immediately post injury phase, the rehabilitation phase, and medical release phase. Please answer all questions as best you can, even if some of the questions seem somewhat irrelevant to you. Circle the appropriate response according to the (0, 1, 2, 3, 4) scale; 0=critical problem, 1=severe problem, 2=moderate problem, 3=minor problem, 4=no problem.

General health-feel good, happy, energetic, active, relaxed, free of medication, free of pain/discomfort, appetite, nutrition, body composition (body weight, obesity, anorexia)...

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Specific medical condition-status of injury, illness, surgery...

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Daily living activities-sleeping, sitting, standing, walking, climbing stairs, dressing, personal care, studying (reading, writing, typing/computer), traveling, driving, personal business affairs...

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Work activities-lifting/lowering, holding/handling, carrying, pushing/pulling, bending over, squatting/stooping, kneeling, crawling, reaching, turning/pivoting, gripping/pinching, fingering…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Sports/recreation/wellness activities-running, jumping, throwing, catching, kicking, swinging, withstanding impacts, weightlifting, specific sport/recreation/wellness activity…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Movement-getting into desired positions, range of motion, speed of motion, bilateral differences, (e.g., limping), need for support device…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Strength/power-applying adequate force, applying force at necessary speeds or frequencies.

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Endurance-sustaining a movement pattern over a long period of time, sustaining a faster paced or more strenuous movement pattern over a short period of time.

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Motor abilities-motor control, coordination, balance, agility, reflexes…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Body structure-swelling, inflammation, atrophy, deformity, posture, bilateral differences, joint stability, muscle spasms…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Sensory-pain, sensitivity discomfort, numbness…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

Psycho-social status-confidence, anxiety, self-esteem, hopeful, depression, socialization, dependence, isolation…

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

During the various phases of injury, please rate your satisfaction with your athletic trainer.

Satisfaction with your athletic trainer-communications, professionalism; Therapy-appropriate to my needs, effective.

	Critical Problem	Severe Problem	Moderate Problem	Minor Problem	No Problem
Immediately Post Injury	0	1	2	3	4
Rehabilitation	0	1	2	3	4
Medical Release	0	1	2	3	4

APPENDIX G

ort Injury Rehabilitation Adherence Scale

Modified Sport Injury Rehabilitation Adherence Scale

1. Circle the number that best indicates the intensity with which this patient completed rehabilitation exercises:

   minimum effort 1 2 3 4 5 *maximum effort*

2. During rehabilitation, how frequently did this patient follow your instructions and advice?

   never 1 2 3 4 5 *always*

3. How receptive was this patient to changes in the rehabilitation program?

   very unreceptive 1 2 3 4 5 *very receptive*

APPENDIX H

Informed Consent Fo

GEORGIA SOUTHERN UNIVERSITY
Jiann-Ping Hsu School of Public Health
College of Health & Professional Studies

CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

Title of Project A Quantitative Examination of Psychological Variables Affecting Injured Athletes Prior to Returning to Play
Investigator's Name Jessica Meyers Phone: 814-241-6395
Participant's Name_____ Date: _____
Data Collection Location _____ Georgia Southern University Campus

_____ Other

I hereby authorize Jessica Meyers to perform on me the following procedures: I will be asked to complete the Athletic Identity Measurement Scale, Trait Sport-Confidence Inventory, a Modified Social Support Survey, a Modified Outcomes Measurement Scale, and a demographic questionnaire.

The following benefits from participation in this investigation have been explained to me: Evidence regarding the effects of sport injury on athletic participation will allow for possible discoveries regarding injured athletes. The knowledge of these effects will help aid in a quicker more efficient rehabilitation process and ultimately enable a positive attitude among injured athletes toward athletic injury, therefore, enhancing the possibility of returning to an injury causing sport.

I understand that Jessica Meyers will answer any inquiries I may have at any time concerning these procedures and/or investigations.

I understand that all data concerning myself will be kept confidential and available only upon my written request to Jessica Meyers or Dr. Barry Joyner. I further understand that in the event of publication, no association will be made between the reported data and myself.

I understand that my Athletic Trainer will complete a questionnaire regarding my adherence to rehabilitation. This will not affect my athletic standing nor will it be linked to me in anyway.

I understand that I may terminate participation in this study at any time without prejudice to future care, athletic playing time, or course grade except provided herein, and that owing to the scientific nature of the study, the investigator may in her absolute discretion terminate the procedures and/or investigations at any time.

If you have any questions about this research project, please call me, Jessica Meyers, at 814-241-6395. If you have any questions or concerns about your rights as a research participant in this study, they should be directed to the IRB Coordinator at the Office of Research Services and Sponsored Programs at (912) 681-5465.

PRINT PARTICPANT'S NAME _____

PARTICIPANT'S SIGNATURE_____

DATE_____

APPENDIX I

Directions for Questionnaire Administration

Thank you for your help during the data collection process for my thesis. Sport injury is an area that I believe, with an enhanced relationship between sport psychologists and athletic trainers, can be assessed and dealt with in a more healthy and efficient manner.

Criterion for participation in my study: Must sustain an acute musculoskeletal injury due to participation in a sport and miss at least one week of competition and or practice or participate in modified activity at the Certified Athletic Trainer's (ATC) discretion.

Directions for Administration of Questionnaire Packet

Given to the Injured Athlete:

- Two Consent Forms (one consent form is returned to me, the other consent form is for the athlete to keep)
- Athletic Identity Scale
- Trait Sport-Confidence Inventory
- Modified Social Support Survey
- Modified Outcomes Measurement Scale
- Demographic Questionnaire

Given to Injured Athlete's ATC:

- Modified Sport Injury Rehabilitation Adherence Scale

Please explain to the athlete that the consent form is informing them of the study and will be seen only by myself and my director. It will in no way be linked to their questionnaires. Please have the athlete and athletic trainer separated when completing the questionnaires. After the athlete completes the questionnaire, please place in an envelope.

When the questionnaires are completed, please place the injured athlete's questionnaire packet with the Athletic Trainer's questionnaire and send to:

Jessica Meyers
Campus Recreation and Intramurals
Akins Boulevard
P.O. Box 8078
Statesboro, GA 30460

If any questions arise, please feel free to contact me at 814-241-6395 or by email at sportpsycher@hotmail.com.

Once again, thank you for you help. It is truly appreciated!

Sincerely,

Jessica Meyers

APPENDIX J

Demographic Questionnaire

Demographic Questionnaire

Directions: Please answer each question completely and honestly. Responses will be confidential.

1. Date of Birth:_____

2. Gender: (circle one) Male Female

3. Race: (circle one) African American Caucasian Hispanic
   Asian Other:_____

4. Academic year in school: (circle one) Freshman Sophomore Junior
   Senior Other:_____

5. NCAA Division: (circle one) Division I Division II Division III

6. Sport that injury occurred in: (circle one) Basketball Football Soccer
   Tennis Volleyball Golf
   Cheerleading Swimming/Diving
   Cross/Country Other:_____

7. How many years have you competed in the sport circled in question 6?
   1 2 3 4 5 6 7 8 9 10+

8. Circle one: Starter Reserve

9. Did the injury occur as a result of physical contact? (circle one) Yes No

10. Length of time absent from the sport in which the injury occurred
    Months:_____ Weeks:_____ Days:_____

11. Have you ever experienced this type of injury before? (circle one) Yes No

12. Specifically describe your injury:_____

_____

APPENDIX K

IRB Approval Letter

Georgia Southern University
Office of Research Services & Sponsored Programs

Institutional Review Board (IRB)

Phone: 912-681-5465

Fax: 912-681-0719 Ovrsight@gasou.edu

4 College Plaza,
P.O. Box 8005
Statesboro, GA
30460-8005

To: Ms. Jessica Marie Meyers
Department of Public Health
Faculty Advisor: Dr. Barry Joyner

From: Office of Research Services and Sponsored Programs
Administrative Support Office for Research Oversight Committees
(IACUC/IBC/IRB)

Date: January 27, 2004

Subject: Status of Application for Approval to Utilize Human Subjects in Research

After a review of your proposed research project titled "Quantitative Examination of Psychological Variables Effecting Injured Athletes Prior to Returning to Play" it appears that (1) the research subjects are at minimal risk, (2) appropriate safeguards are planned, and (3) the research activities involve only procedures which are allowable.

Therefore, as authorized in the Federal Policy for the Protection of Human Subjects, I am pleased to notify you that the Institutional Review Board has approved your proposed research.

This IRB approval is in effect for one year from the date of this letter. If at the end of that time, there have been no changes to the expedited research protocol, you may request an extension of the approval period for an additional year. In the interim, please provide the IRB with any information concerning any significant adverse event, **whether or not it is believed to be related to the study**, within five working days of the event. In addition, if a change or modification of the approved methodology becomes necessary, you must notify the IRB Coordinator **prior** to initiating any such changes or modifications. At that time, an amended application for IRB approval may be submitted. Upon completion of your data collection, please notify the IRB Coordinator so that your file may be closed.

Sincerely,

Julie B. Cole

Julie B. Cole
Director of Research Services and Sponsored Programs

cc: Dr. Barry Joyner